Disease-Modifying Agents for Peripheral Neuropathy: Public Health Impact of Peripheral Neuropathy

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DOES NEUROPATHY MATTER?

- Of course
- Are we a sufficient audience for this question?

Disease-Modifying Agents for Peripheral Neuropathy

Optimal metabolic control, lifestyle modification (hyperglycemia, hyperlipidemia, hypertension)

Immune therapies: IVIG, PLEX, immunosuppressive therapies, monoclonal antibodies/targeted immune therapies

Specific replacement therapy: vitamin B12

(Neuroprotective agents: Mg, Ca some drugs, oxaliplatin)

Chemotherapy, radiation, bone marrow transplantation

Antibiotic therapy: dapsone, rifampin, clofazimine

Abstinence: ethanol, pyridoxine (other toxins)

Liver transplantation

Decompression

Supportive care (ICU, care givers)

To "rewire" the body: nothing

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Prevalence of Neuropathy in the General Population

- 2% (?): moving target
- One risk factor: 12%
- Two risk factors: 17%

Hughes, 2002, BMJ 324:466-469 and England, 2004 Lancet 363:2151-2161

- Diabetes: 50%
- Medicare survey 1999

8-9% HAVE NEUROPATHY AS PRIMARY OR SECONDARY DX; COST: 3.5 BILLION/YEAR

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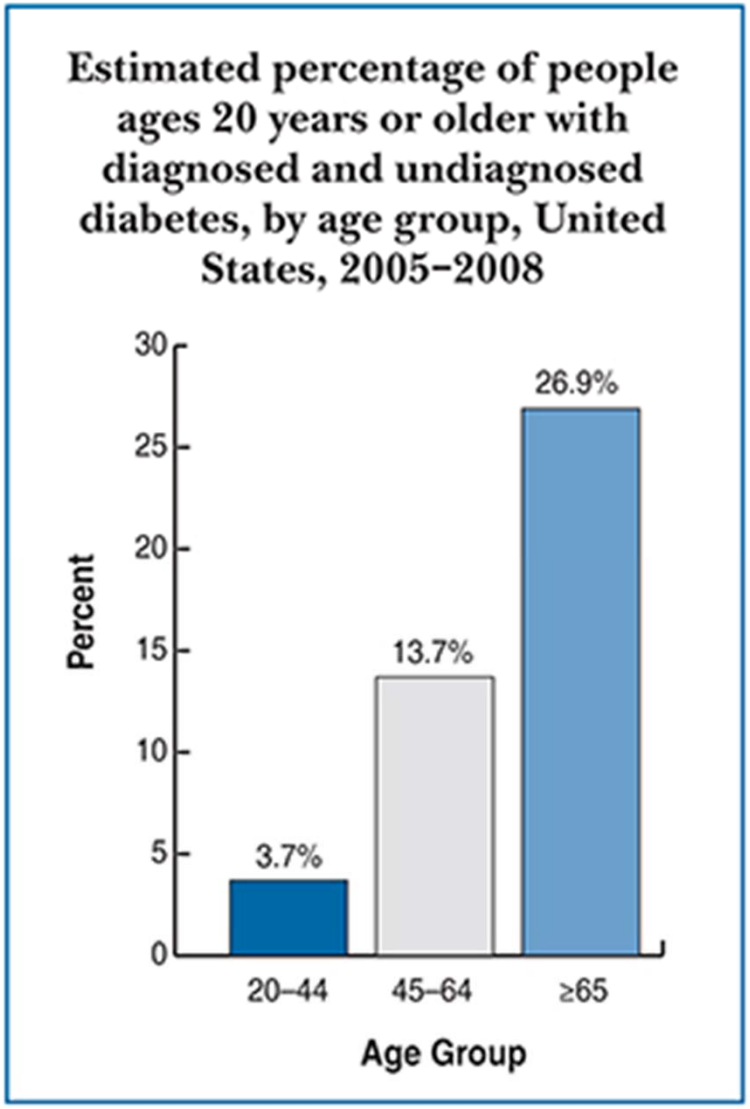
Prevalence of Diabetes

- Canada: 2008-9
  - 6.8%
  - 20% undiagnosed cases
- (Public Health Agency of Canada; www.publichealth.gc.ca)

Diagnosed and Undiagnosed Diabetes

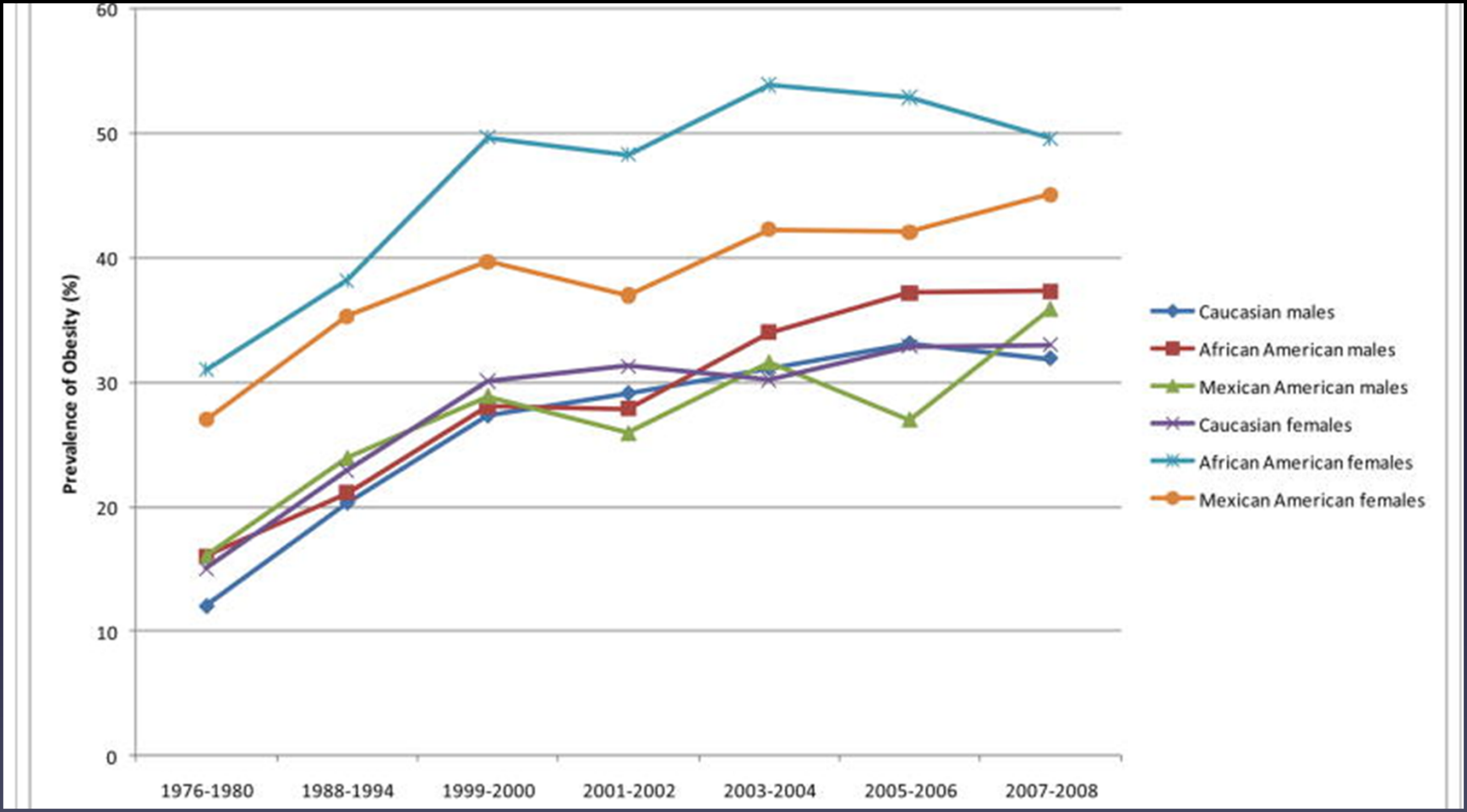


Source: 2005–2008 National Health and Nutrition Examination Survey

Epidemiology of DSP

- Dx uncertain
- Incorporates background neuropathy

Obesity Rates



Mitchell, Psychiatr Clin North Am 2011; 34:717-732

Diabetic Neuropathic Pain

- *Swansea Study, Davies, Diabetes Care, 29, 2006*

-T2 DM patient survey; cross-sectional, population based

-63.8% had pain

  - 26.4% pain due to painful diabetic neuropathy

Chronic painful dsp

Prevalence: 16%

12.5% had never reported their symptoms to their physician

39.3% had never received any treatment for their pain

Daousi et al., Diabetic Med 21: 976-982, 2004

Burden of Painful Diabetic Neuropathy

- Latin America, Middle East and Asia
- Difficulty functioning, sleep and overall health status
- Worse with higher pain levels

Hoffman, Pain Pract 9:35-42, 2009

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Public Health Impact of PN

- Costs of disease: investigation, treatment, disability, QOL
- Costs of treatment: increasing costs, health equity
- Public perception: awareness, ?priority

Public Health Impact

- Costs of Disease
  - Prevalence of peripheral neuropathy
    - 3.2% in population based survey

      Kandil, Neurol Res 2012, 34:960 966
    - DSP and CIDP
    - DSP - Population based study Sweden: 67% DSP

      Karvestedt, J Diabetes Complications 2011, 25:97 106
    - CIDP: 15 sets of NCS criteria, forme fruste
      - 1.6/100,000 a year and prevalence 8.9/100,000

        Laughlin, Neurology 2009, 73:39 45
      - 32% needed aids to walk; $37,000 USD/yr/pt in 2009 in UK

        Hughes, J Clin Immunol 2010, 30:S70 S73

Direct Costs of Disease

- Medical & neurological consultations
- Electrodiagnosis
- Laboratory investigations

Direct Costs of Disease

- Treatment
  - Diabetes, prediabetes, ?obesity
  - Immune therapies
  - Others

Indirect Costs of Disease

- QOL (Disability burden and emotional distress)
- Co-morbid depression (2x general population)
- Reduced compliance with treatment
- Hidden costs: trauma (fracture, head injury, others)
- Loss of working days
- Amputation
- Work environments: ergonomics, design, modification
- Many cancer treated patients have some neuropathy
- Chronic pain, psychosomatic disorders
- Neuropathy in aging, "neurodegenerative disorder" with pervasive impact on general health of the elderly

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Public Health Impact

QOL reduced

Parallels disease severity

Padua 2005, Van Acker 2009, Happich 2008, Jagersma 2012

Public Health Impact

- Reduced QOL and MOS-SSS comparable to other chronic diseases
- Social support predicted improved MH-QOL when controlling for other factors that might influence QOL (age, gender, pain, severity of neuropathy)

Accepted for publication: Maxwell, et al, Association of Social Support with QOL in patients with polyneuropathy

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Public Health Impact

- Awareness
- Health Equity

Avoid expanding inequity

Utilization of IVIG

- "Appropriateness" of the use of intravenous immune globulin before and after the introduction of a utilization control program,

  (Feasby, Open Med 2012;6:e28-34)

- Ontario: cost increased by 53% in 5 years

  (Shepherd, Ont Med Rev 2013:24-25)

Use of immunoglobulins in adults in a university hospital: a retrospective study

- 36/122 immune deficiency
- 19/122 CLL or MM
- 19/122 lung transplantation
- 17/122 kidney transplant
- 1/122 heart transplant
- 20/122 GBS & CIDP
- 10/122 ITP
- Farber, Acta Clin Belg 2011; 66:416-418